U.S. ENVIRONMENTAL PROTECTION AGENCY

PUBLIC HEARING TO PRESENT ORAL TESTIMONY ON EPA'S PROPOSED RADIATION PROTECTION STANDARDS FOR YUCCA MOUNTAIN, NEVADA

Ronald Reagan Building
International Trade Center
Hemisphere B Meeting Room
1300 Pennsylvania Avenue, Northwest
Washington, D.C.

Wednesday, October 13, 1999

HEARING PANEL MEMBERS:

Stephen D. Page

Mary Kruger

Frank Marcinowski

Geoffrey Wilcox

TESTIFIERS:

Steven Kraft, Nuclear Energy Institute

Kevin Kamps, Nuclear Information and Resource Service

Brian O'Connell, National Association of Regulatory Utility Commissioners

Paul Farron, Individual

Charles Higley, Public Citizen

Dr. Judith Johnsrud, Sierra Club, ECNP and NECNP

P R O C E E D I N G S

MR. PAGE: Good morning. I think we're going to go ahead and get started. I want to welcome you to the United States Environmental Protection Agency's public hearing to receive oral testimony on our proposed radiation protection standards for Yucca Mountain, Nevada.

My name is Steve Page, and I'm the Director of the Office of Radiation and Indoor Air at EPA. I'm here to serve as the presiding officer for these proceedings. And the main purpose of today is to listen to your statements, your comments on the rules and we have a few things to take care of before we get into that.

I'm going to introduce the panel. After we do that I'll describe briefly our proposed regulation.

And then third I will explain the ground rules for the hearings.

The EPA panel members with me today are Frank Marcinowski to my left, who is the Acting Director of the Radiation Protection Division in the Office of Radiation and Indoor Air. To my right, your left, is Mary Kruger, who is Director of the Federal Regulations Center. And on my far left, your right, is Geoff Wilcox.

He's an attorney from the EPA's Office of General Counsel. We can't have a hearing like this without an attorney present.

I want to cover a little bit of the background on our rule, and then we'll get into the hearing procedures. Can you all hear me okay in the back? Fine, okay.

In 1992 Congress gave EPA the important task of setting standards to protect public health and the environment from harmful exposure to the radioactive waste that would be disposed in the proposed underground repository at Yucca Mountain, Nevada. While EPA will set these standards, the Nuclear Regulatory Commission has the responsibility of ensuring that the Department of Energy can demonstrate that the repository meets the standards.

Siting a repository at Yucca Mountain raises many complex technical, scientific and policy issues. For more than five years EPA has conducted extensive information gathering activities and analysis to understand these issues.

Our goal is to issue standards that are scientifically sound, that can be reasonably implemented and above all, that are protective of public health and the environment.

Our proposed standards address all environmental pathways, air, water and soil. The standards are designed to protect the closest residents to the repository to a level of risk within the range we consider acceptable for all other cancer-causing pollutants.

The closest residents to the repository are currently located at Lathrop Wells, Nevada. This means that those further away would even be more protected.

In addition we're proposing to protect the valuable ground water resources of Nevada. Because the proposed repository sits above an important groundwater aquifer, we're proposing that this precious natural resource be protected to the same limits to which every other source of drinking water in this country is protected. We want to provide this protection since the water is currently being used for drinking, irrigation and dairy cattle. In the future, this resource could also supply water to many people in the fast-growing Las Vegas area.

This proposed regulation and these hearings are important milestones in a series of very deliberate steps to insure public involvement throughout the decision-making process.

We are here today to listen to your views and concerns on our proposal. EPA is also seeking written comments on our proposed standard, and I want to reassure you that all written and oral comments will be carefully considered before EPA makes a final decision.

Now for the hearing procedures. In this public hearing no one is sworn in and there is no cross examination. The speakers will be asked to present their statements and should not expect a response from the panel members.

We have a Court Reporter who will produce a verbatim transcript of today's proceedings, so it is important that we get a clear, uninterrupted record.

If you have a written copy of your statement, we will be glad to accept it when you are called to testify. I ask all speakers to identify themselves for the Court Reporter, spell your name for the record. Please speak slowly and clearly, and stop if either the Court Reporter or I signal you to do so.

During these proceedings for clarification purposes only, it may be necessary for the Court Reporter or members of the panel or me to question the speakers about specific statements made during their testimony.

As stated in the Federal Register notice, speakers registering in advance are guaranteed speaking

time. Speakers not registered in advance may register at the table outside the door and will be scheduled to testify as openings are available.

We are scheduled to be here today until 5:00 o'clock, and we're going to do our best to accommodate all of those wishing to speak.

We'll be taking a lunch break and some other small breaks as needed.

Individuals are allowed five minutes to testify on their own behalf. Those representing an organization are allowed ten minutes to testify. We'll be using a timer that operates similar to a traffic light, which is located right here in front of me.

I will tell you when it is time for you to begin your statement. The time keeper located over here will start the timer, and the green light will appear. When you have two minutes left you get a yellow caution light, and you should begin your closing remarks.

When your time has elapsed the light will turn red, and I'll ask you to stop even if you've not concluded. While the time keeper resets the timer I'll call the next speaker to the microphone and notify the speaker when to begin.

Out of respect for everyone' opinions, please abide by these limits so that the maximum amount

of people can be heard.

Our speakers today fall into two categories, those who preregistered and those who registered at the door. Once everyone who wishes to testify has done so, those of you whose statements are longer than five or ten minutes will be recalled and allowed to continue speaking in five to ten minute increments.

Time permitting this procedure will be repeated until everyone who wishes to be heard has completed their statements. I believe this system is fair to everybody.

Our purpose today is to solicit public comment on our proposed standards for Yucca Mountain, so we ask you to confine your comments and remarks accordingly. All of the testimony we receive today will be fully considered as we move toward developing our final standards.

I'll remind you that written comments may be submitted to us no later than November 26th, 1999. Anything you did not get to say today, or anything you wish to say in response to what has been said here, may be submitted for consideration. Information submitted in writing is given the same weight and importance as oral testimony.

Please see the information table for the docket locations and hearing ground rules. A transcript of today's hearing will be available for review at each of the docket locations in approximately two to three weeks.

I want to thank you for taking the time to attend and testify at today's hearing, and I didn't mention earlier, but this is our first hearing in a series of four. This will be the only one in Washington, D.C., and next week we are out in Nevada, and the week after, I believe it is, we go to Kansas City for a hearing out there.

All right, our first speaker today is Steven Kraft from the Nuclear Energy Institute. Steven, there is a microphone over here to the right which I didn't point out to you, if that's all right.

MR. KRAFT: I have a copy of the view graphs I'll be using, gentlemen.

I used to be a lot taller.

Good morning. My name is Steven Kraft, K-r-a-f-t. I am the Director of Spent Nuclear Fuel at the Nuclear Energy Institute.

NEI is the Washington-based association of the nuclear energy industry. We have 300 members in 15 countries representing all the nuclear power plant

operators in this country, many worldwide, engineering firms, radiopharmaceutical companies, universities, law firms, labor unions and research laboratories. There has been an extraordinary amount of interest in our membership on this standard.

This morning I will focus on a few key issues, and we will be filing a very full statement by the due date as the chairman stated.

The EPA proposal for a repository standard for Yucca Mountain is a very important step in a process of providing disposal and management of the nation's high level waste. Responsible disposal of spent nuclear fuel is a national imperative. DOE's performance under the Nuclear Waste Policy Act and its lack of performance under the attendant contracts has become something of legend, and I will not review that for you today.

I think everyone understands that there is a need for this standard to be in place and to be an adequate standard for that process to go forward. Appropriate radiation standards are an important building block in that process, and the standard is long overdue.

However, it is not a step in the right direction. The standard as it has been proposed with a separate ground water limit is very poor public policy, as I will discuss in just a few minutes, and that is what

my remarks will focus on.

But as a second and equally important matter, the duplication of the NRC role that EPA proposes in the implementation criteria in the draft standard is unnecessary and counter-productive. NRC can do a much better job of implementing any standard EPA prepares and promulgates if they are left to their own devices in determining how to implement.

Having said that, let me focus on the separate ground water matter, which is the key, for promulgating a standard with a separate ground water requirement ignores the science of the last two decades. The National Academy of Science's report makes it clear as to the appropriate way to approach this matter.

Additionally and perhaps most importantly, providing a separate ground water standard actually creates a standard that provides no additional public health or safety benefit. By its very nature an all pathway standard, which is also in EPA's proposal and in the NRC proposal will protect drinking water by its very nature. You have to include those facts in the all pathway standard.

As a result you will also hinder construction of the best repository. You can eliminate an otherwise perfectly good repository. And importantly,

it ignores the law as we read it, that Section 801 of the Energy Policy Act refers to the standard, EPA's, as the maximum annual effective does equivalent to individual members of the public as the only standard that is to be effective in this way.

Getting to a more detailed description of this, I'll offer this with some apology, it is sort of a busy chart. But let me use this to explain a point that we are making.

A separate ground water standard results in less protection of the public than a single all pathways standard. That sounds somewhat counter-intuitive, I know, because as you go from a standard that has a low quantitative number to a lower quantitative number, we never talk about high quantitative numbers, it appears that you are providing greater protection to the general public merely because the number is numerically lower.

But what happens is, you have to study the way the designs progress as a result of doing so. First, imagine a situation which we would never permit in this country of having a very, very weak standard where you have somewhat higher risks of health effects. We would never permit that in this country, and no one is advocating that.

And as you do things like select the right site, arid, above the water table, all those features that led Congress to select the Yucca Mountain site in the first place, the performance of a repository improves. Then you start adding design features. You use a robust container, perhaps you put in a drip shield, perhaps you do other, backfill, barriers, whatever it is that are required, and the analysis shows that the doses, the risks fall even lower, and you come to an optimal point.

Now, let me just say that this curve that we're following does not follow any easily described or known mathematical relationship. It is purely a notional way of describing this relationship that engineers know full well in our experience in designing systems.

What happens is, once you pass that balance point of the minimal, the minimum effect, the minimum risk, you have to start adding additional design features in order to meet the lower standard still and further the even lower ground water standard.

What are those design features? Well, if you look in the DOE's draft EIS, you would imagine it's things like even smaller containers, spread over greater land mass, and ventilation systems and all these things that serve in fact to raise the calculated, statistically

calculated public risk.

Because what happens is that in this particular case you would take the repository and you would make it larger. And you would end up mining out much greater rock and you would release far more radon, thereby increasing the total dose.

It is the total dose from all pathways that is the key in this situation, and that is why a standard with the ground water, the specific ground water limit in it, is far less protective than a standard without.

Those are my comments. Thank you very much.

MR. PAGE: Thank you, Mr. Kraft. Kevin Kamps, Nuclear Information and Resource Service. Are you going to be using the overheads, or --

MR. KAMPS: No, I'm not.

Shall I just begin?

MR. PAGE: Go ahead, please.

MR. KAMPS: My name is Kevin Kamps, and I represent the Nuclear Information and Resource Service. I'm the person on staff who works on high level nuclear waste issues there.

I'd just like to begin by thanking the EPA for releasing the standard. We as an organization have

been fighting for years to keep EPA as the standard setter for the Yucca Mountain repository, proposed repository. We feel that EPA is much better able to protect the public's health and the environment than the NRC, and a comment that the previous speaker made about the NRC being left to its own devices really rang a bell with me, because I feel like that would be leaving the fox to guard the henhouse. And so we really encourage EPA to continue in their role as protectors of the environment, protectors of public health and we very much support that.

And I'd like to add that that is current United States law, which we have also struggled as an organization with members in 50 states to uphold, that EPA be the standard setter. That is Congress' law and there have been efforts to change that law, and we have tried to protect the environment by upholding EPA as the standard setter.

So with that said, I would like to address the proposed rule for Yucca Mountain that has been recently released. We do have concerns with this. Even though we do fully support EPA as the standard setter, we have concerns with the proposed rule. That's what I'd like to share with you.

One of the first concerns that we have is

in regards to the time cap on the repository. We feel that a 10,000 year time cap is an arbitrary determination that falls far short of the needed standard. The highest releases, the highest doses to the public, will occur after the 10,000 year time cap.

The National Academy of Sciences has recommended that the compliance period for the proposed repository at Yucca Mountain last as long as peak doses would occur. Which could be at a point 100,000 years after emplacement. And the 10,000 year time cap falls far short of that, so we strongly encourage the EPA to rewrite this section of the proposed rule to fully protect public health and the environment by taking into consideration the long time frame in which peak doses would occur down the road.

A little conversation I had in the office, we came up with an analogy for the present 10,000 year time cap. It's like saying that as long as the kids wait until their parents leave for the evening, it is okay if they destroy the living room furniture or burn down the house. So just to help you see how we feel about this.

Our second concern addresses the dilution factor that's involved. We're wondering what good the site boundary is if the measurement is going to be made 20 kilometers downstream. So we feel that dilution is

not the solution to pollution. We feel that the compliance point should be either on-site or at the site boundary, and not at such a far distance away.

We feel that that would set, as with the time cap, a very poor national and international precedent with not just in terms of high-level nuclear waste storage, which would be a very bad precedent worldwide, but also in terms of other environmental issues. Other hazardous waste sites.

A third concern that we'd like to address is who will receive the dose. We feel that the reasonably maximally exposed individual as discussed in this proposed rule may be the right terminology but it's the wrong definition. We call on EPA to make the reasonably maximally exposed individual the fetus carried by the subsistence farmer, because this individual would be much more vulnerable to harm from radiation than would be the assumed world residential assumption in this proposed rule.

And we feel that the assumption that world residential will carry for centuries and thousands of years and tens of thousands of years is not right. It's much more appropriate to assume a subsistence farmer scenario.

In terms of specific groundwater

protection, we fully support EPA in establishing ground water protection for this site. Again, it gets back to the precedent that would be set not only for nuclear waste but for other forms of hazardous waste. We feel that not to do so would create the biggest loophole of all for Yucca Mountain, since it's known that the most massive releases and doses to the public would come through the ground water used as drinking water but even more significantly, to irrigate crops which would concentrate radionuclides in the food.

In terms of human intrusion, our proposed standard for EPA to call for is continued regulatory guardianship into the distant future for this waste. Gold mines are to be seen within site of Yucca Mountain from the present day, and in addition in the future it's possible for water to be drilled even at the foot of Yucca Mountain. We don't believe it would be drilled from the top, of course, but certainly at the foot of Yucca Mountain it's possible that wells could be sunk.

And so we feel that one intrusion is not enough to assume, but it should be assumed, possible multiple intrusions over time, and for that reason continued regulatory guardianship is required.

In terms of who will set the standard, NIRS for many years has advocated that whoever will do it

right is the agency to set the standard for Yucca Mountain. Whoever will protect the environment, whoever will protect the public health to the fullest extent of the law, and for a lot of the reasons that I've mentioned we feel that the standard should be a standard, and should not be weakened to such a point that it's not a standard any more. That's what standards are for, to eliminate inappropriate sites from consideration.

And there has been a pattern and a pressure for many years building up from sources like the nuclear industry and nuclear proponents and government agencies to weaken the standards enough for Yucca Mountain to make it acceptable for the dumping of nuclear wastes.

We feel that the standard should be legitimate and if that were the case, that Yucca Mountain would be eliminated from consideration for the national repository. And for this reason we joined with over 200 other environmental organizations, public interest organizations in December of 1998 calling for the disqualification of Yucca Mountain from consideration based upon the fast flow of water through the mountain to the waste repository level within the mountain.

Under current DOE guidelines that is a disqualifying factor for a repository, and we called upon

the Secretary of Energy to disqualify the Yucca Mountain site based upon the fast flow of water to the repository level.

And this was seen, of course, when chlorine-36 was discovered deep within the bowels of the mountain, which was less than five decades old. So instead of it taking 1,000 years for water to reach the waste, it had only taken some 50 years for this rainwater to make it all the way down to the waste level in the mountain.

And based upon the politics that have driven the choice of Yucca Mountain from the beginning, we feel that standards should be science-based, not politically driven, economically driven or driven by expediency.

And so for all of these reasons, we commend EPA for being a standard setter, and thank you for this hearing.

MR. PAGE: Thank you, Mr. Kamps.

The next speaker is Brian O'Connell from the National Association of Regulatory Utility Commissioners.

MR. O'CONNELL: Good morning. My name is Brian O'Connell, O, apostrophe, C-o-n-n-e-l-l. I'm the Director of the Nuclear Waste Program office at the

National Association of Regulatory Utility Commissioners. We're headquartered here in Washington, D.C. I'd like to submit my written testimony into the record.

NARUC is a quasi-governmental non-profit organization founded in 1889. Within its membership we have governmental bodies in the 50 states engaged in economic and safety regulation of carriers and utilities. The mission of NARUC is to serve the public interest in seeking to improve the quality and effectiveness of regulation in America.

More specifically, NARUC is comprised of those state officials charged with the duty of regulating the retail rates and services of electricity, gas, water and telephone utilities operating within their respective jurisdictions. We do not consider ourselves a nuclear proponent.

Utility rate payers are stakeholders in the matter of the disposal of nuclear waste. On their behalf we have followed this matter very closely since well before the passage of the Nuclear Waste Policy Act in 1982, because at least 34 states which have nuclear power plants also have nuclear waste from spent fuel from those plants stored at reactor sites that were

never intended for permanent indefinite storage of such materials.

By passing the Nuclear Waste Policy Act in 1982, Congress established a national policy to permanently dispose of spent nuclear fuel and other high-level radioactive waste in a geologic repository beginning in January, 1998, the Department of Energy was responsible for meeting that milestone. That law also assigned a responsibility for setting the radiation standards for the repository to EPA. It further established the Nuclear Waste Fund as the mechanism to pay for the packaging, shipping and emplacing of spent fuel and other waste in the repository.

For various reasons, the federal agencies have not met their schedules. But let me assure everyone present that the payments into the Nuclear Waste Fund did begin in 1983, and have now accumulated to over $15 billion, which continues to be collected and will be.

Those payments are made through electricity rates paid by rate payers who consume electricity generated by nuclear power plants. It is on their behalf that I am here this morning.

Our message is simple. We want the repository built in a safe, economic and expedient manner as required by the Nuclear Waste Policy Act, and whatever

other laws and regulations will apply. We want the waste moved from its present locations as soon as possible.

The Department of Energy schedule for opening the repository at Yucca Mountain is 2010 at the earliest, which is 12 years past the date Congress directed in 1982. We urge that the federal government establish radiation standards for the Yucca Mountain repository that enable the department to design and build the repository to first of all serve its purpose, and protect public health and safety for present and future generations to the extent reasonably foreseeable given the uncertainties of the thousands of years the waste must be isolated from human contact.

I'd like to address the radiation standards for Yucca Mountain. We're still reviewing the proposed rule, and we intend to provide written comments by the end of the comment period. My comments today reflect our first reactions and raise some questions based on our attempt to understand the proposed regulation. I'd like to touch on some key points of concern.

First of all, what is the standard attempting to protect? The proposed rule seems to set a limit on doses of radiation to various populations for various pathways to human contact. The levels would be

measurable doses over an annual period.

In the discussion accompanying the proposed rule, EPA described its understanding of a possible relationship between dose levels and the risk of cancer in certain populations. Apparently EPA seeks to protect the public from additional risks of cancer attributable to just the Yucca Mountain repository. That is to say, it seeks to limit the additional risk of cancer that may occur only due to this facility.

However, it is our understanding that the linkage between dose and risks is not fully agreed among the experts in radiation health. Notwithstanding, various proponents of one dose level or another want to set a limit at a finite level below which it's safe, and above which is not allowed.

We further understand that there is uncertainty in the repository design over what level of radiation will reach human contact at what uncertain time in the 10,000 year period of the repository performance.

As a non-expert I simply wonder how will this be demonstrated, how will this compliance be demonstrated, in the repository design by DOE and in the licensing by the NRC.

In our written testimony we address the following points: When and where might the exposure

levels exceed standards; we find that the intrusion scenario seems even harder to prove or disprove if not simply being far-fetched. The water supply assumptions seem inappropriate to the Yucca Mountain area, in that you hypothesize a much greater increase in the population in the area than I believe is foreseeable.

As to the standards themselves, it's hard to believe it's taken the federal government 17 years to develop a radiation standard for Yucca Mountain, in that it is still a source of disagreement among technical specialists and policy-makers alike.

We know that the NRC, whose experience and expertise in radiation matters predates the establishment of EPA, and has issued a statement in August that a maximum level of 25 millirem per year will fully protect public health and safety, and that there is no health and safety reason to have a separate ground water protection standard. We note with some dismay that both the NRC and EPA cite the same National Academy of Sciences study to support their respective positions.

We are further perplexed by references in the discussion of the proposed rule in Section 3(b)(2) and table one, such as -- and I had to read this several times, I'm still not sure I understand it -- you say we estimate that the 25 millirem per year whole body dose

limit established in 1985 is essentially equivalent to the risk associated with today's 15 millirem CEDE per year.

Those of us unfamiliar with radiation health science find it difficult to understand what the difference really is, since we're unsure what the CEDE really means. There's a public communications concern here.

What is a reasonable standard, you ask. In the proposed rule, EPA asks, is our proposed standard of 15 millirem CEDE reasonable to protect both individuals and the general public. Our answer is, we answered it in this fashion: If it can be achieved at Yucca Mountain it may be reasonable. We find no basis to see why 25 millirem is not just as reasonable.

For example, the NRC which has competence in this area, has stated that that level is adequate. We note that the level is consistent with international standards. We are aware that any analysis that shows what incremental benefits would be between 15 and 25 millirems, we're unaware of such an analysis compared to the incremental costs to achieve such benefits. And the relationship between dose limits and cancer risks is still subject to debate.

In sum, we are inclined to support the

level of 25 millirem as an adequate standard for use in planning and licensing of the Yucca Mountain repository, unless the NRC finds that another standard is more appropriate. We have confidence in their ability to make a sound professional judgment in the consideration of all costs and benefits when licensing the repository for spent nuclear fuel and other high-level radioactive wastes.

We therefore urge that the annual dose standard for the general public in a reasonably maximally exposed individual be changed to 25 millirem or such level that the Nuclear Regulatory Commission considers adequate. Further, we recommend that the section on ground water standards be deleted from the proposed rule.

We'll expand our comments in writing by the end of the comment period, after we've had an opportunity to reflect on what we hear today and study the proposed rule more fully.

Thank you very much for your hearing.

MR. PAGE: Thank you, Mr. O'Connell.

Mr. Farron, Paul Farron.

MR. FARRON: Before I comment on the proposed radiation standard, I think it's important to talk about how we got here in the first place,

specifically with respect to the politics that played into the decision to construct a geological repository for spent nuclear fuel.

As you know, actions leading to the passage of the 1982 Nuclear Waste Policy Act began in earnest with nuclear proliferation concerns coming out of the Carter administration, culminating in the presidential order indefinitely postponing spent fuel reprocessing. Carter's actions forced political involvement in the highly technical and scientific issue. Politicians were now into details. The federal government strengthened its position in taking title and spent fuel storage provisions.

The federal focus began shifting to a permanent geological repository as the ultimate disposition of spent nuclear fuel. By 1982 Congress was compelled to take legislative action in the wake of diverse scientific opinions, public health and safety concerns, and the federal government's continued involvement and commitment to provide an ultimate disposition of spent nuclear fuel.

Thus in 1981 Congress passed the Nuclear Waste Policy Act, imposing a political solution to a scientific and technical issue. Utilities, that being

licensees, had to sign on to this agreement or face plant shutdowns. The utility that I work for eventually signed this agreement under protest.

The standard contract holders now had to live with a political resolution and try to make it work with the Department of Energy. Over the last 17 years contract holders still have had to live with this political solution, and many now actually embrace it.

Now, in 1999, the EPA has finally proposed a radiation standard for geological repositories. Unfortunately we are again looking at a political driven rather than a scientific resolution of this issue. The reality is that the risk to the public from a geological repository is essentially the same whether the limit is 25 millirem, 15 millirem, four millirem or 35 millirem. The difference in the numbers is actually the cost that it imposes on the construction of the repository, not the radiological risks to the public.

If EPA was really concerned about the risk to the public, they would focus their attention on tobacco products which affect air quality and consequently radiation exposure to the public.

If you're involved in this at all, you know that the average annual effective whole body dose received by a smoker is 1,300 millirem; that the dose to

the lungs is 60 millirem, and this is on an annual basis. Non-smokers are also affected to a lesser degree to exposure by second-hand smoke.

There are many consumer products, pollutants and other considerations such as where we choose to live that make a potential annual dose of 15 millirem or 25 millirem from a repository seem to be in the noise (sic).

In summary, I don't think that two poor political actions, this being one, make a right. EPA needs to be realistic and use accepted, already conservative, international standards for Yucca Mountain and other geological repositories.

Thank you for your time.

MR. PAGE: Thank you, Mr. Farron.

The next speaker is Charles Higley.

MR. HIGLEY: Good morning. My name is Charlie Higley, and I'm a Research Director with Public Citizen. Public Citizen is a consumer advocacy organization that was founded by Ralph Nader in 1971. The correct spelling of my last name is H-i-g-l-e-y.

Thank you for this opportunity to testify regarding the U.S. Environmental Protection Agency's environmental radiation protection standards for Yucca

Mountain, Nevada.

EPA's proposed rule would set standards for radiation exposure from a proposed storage facility for high-level nuclear waste at Yucca Mountain, and we support EPA's role in helping to set these standards. Nevertheless, we believe that EPA's proposed rule is too lenient and would likely lead to serious health problems for people living near the nuclear waste dump and for people using products produced near Yucca Mountain.

EPA's proposed rule fails to establish a radiation standard up to the peak period of radiation exposure. Models of Yucca Mountain prepared by the U.S. Department of Energy suggest that the peak exposure to radiation will occur after 300,000 years.

Further, DOE predicts that radiation doses at 100,000 years will be 500 times larger than doses during the first 10,000 years after the facility is opened.

However, EPA's proposed radiation standard would cover only the first 10,000 years after the nuclear waste dump is opened. No radiation standard would be in place for the 290,000 years prior to what models predict to be the peak period of radiation exposure.

Not only would EPA's propose rule fail to promulgate a standard for countless generations, EPA's

proposed rule is contrary to a recommendation by the National Academy of Sciences that the radiation standard should protect public health through the peak period of exposure to radiation.

Another concern is EPA's decision to measure the radiation dose 20 kilometers or about 12 miles from the border of the nuclear waste dump instead of measuring radiation at the dump's border.

As stated in the proposed rule, the purpose of the geological repository is to contain and isolate the deadly waste. Therefore the radiation should be measured at the edge of the dump and not a dozen miles away.

On a related issue, the EPA has set a standard for radiation in ground water, four millirems. But the EPA standard would allow ground water close to the nuclear waste dump to contain higher levels of radiation. In other words, EPA is hoping that any radiation leaking from the dump and into the ground water will be diluted by the time it reaches the wells used by neighboring communities for drinking and irrigation water.

Given the uncertainties in predicting how slow or fast radiation will travel through the ground water over the next several hundred thousand years, the

EPA should set a radiation standard that does not depend on dilution for protecting public safety.

Also I'd just like to add that it seems fairly obvious that ground water will be how radiation escapes from the nuclear waste dump and into the surrounding environment. Therefore it makes perfect sense, there should be a ground water radiation standard, and we applaud EPA for its efforts in that direction.

Thank you very much.

MR. PAGE: Thank you. The next speaker is Judith Johnsrud.

DR. JOHNSRUD: My name is Judith Johnsrud. J-o-h-n-s-r-u-d. I am a geographer, and my doctoral work was focused on the geography of nuclear energy, and I've spent some 30-plus years involved in this issue.

I am representing today the Sierra Club. I've been chairing the National Nuclear Waste Task Force of the club and am vice chair of the Pennsylvania Chapter. I also am representing the Pennsylvania based Environmental Coalition on Nuclear Power founded in 1970, and have been asked also to represent the New England Coalition in Nuclear Pollution, also founded in 1970.

My views are indeed my own. I, however, think I will be representing those of these

organizations, each of which will be filing separate comments in response to all of your questions by the deadline. However, because I think that most of the public has been unaware of, well, perhaps not of the issuance of the draft standard, but of your schedule for hearings and the deadline for comment, I would ask right now that EPA extend the comment period so that those throughout the nation, not just here in Washington, and Las Vegas, but also throughout the entire nation have an opportunity for comment. I just don't think they are aware, and certainly a great many people other than those in Nevada and here have a deep concern.

I want to offer a strong support to EPA in all of its standards settings endeavors. We really feel that this is the only organization that takes quite seriously its responsibility for protection not only of public health but also of the environment. And I must add, in response I think to an earlier comment, there is a deep concern that the Nuclear Regulatory Commission has not only a charge in law for development to the maximum extent of the nuclear industry, but also lacks the people with the pertinent backgrounds for careful and proper assessment of radiation injury to people and the environment.

The agency tends to be composed of nuclear

engineers rather than radiation biologists, medical doctors, pediatricians, geneticists and those are the area of concern.

While we are exceedingly supportive in our organizations of EPA, at the same time we are disappointed that this standard, proposed standard does not achieve what many of us believe is required for the proper protection of both people and the environment with respect to radiation exposures.

Certainly the decision to go with the RMEI as opposed to an average number of the critical group is a substantial improvement, and we're pleased to see that. However, the definition of the reasonably maximally exposed individual doesn't take us where we believe a proper policy of prudence with regard to protection would end up. And that would indeed be with protection of the embryo and fetus during the critical periods of gestation. The mother equally as a critical factor should be considered not just the presumably male farmer.

The calculation of the dose at a substantial distance from the site we find also to be a failing. The present patterns of population and of land use unquestionably will vary over time. And thus we need

to take into consideration a potentiality for changes that would permit the uses of land closer to the boundary of the site.

In fact, perhaps a more extreme but reasonable view would be that the calculation of dose should begin at the site of release, from within the repository.

I am troubled at the use of present-day circumstances. Certainly within 100 years or much less we've seen vast alterations of land use or technological capabilities, of population life styles, of all sorts of characteristics of people and places. And while we recognize the near-impossibility of any realistic prediction over even 10,000 years, nonetheless the prudent course of action, we believe, would be to take the most conservative approaches, taking into account not just cancer incidence or lifetime probability of fatal cancer, but also other aspects of radiation injury in the most conservative form.

This would include a recognition of other forms of damage to human health apart from fatal cancers. And I believe that there is increasing evidence that low dose impacts are indeed effective in causing or being

related to other illnesses apart from cancers that are injurious to human health. We take little consideration of the totality of genetic impact of radiation exposure. And these I believe need a much more careful consideration.

In addition, I would add from a symposium earlier this year that -- a international symposium on ionizing radiation -- that the progressive regulators elsewhere in the world appear to be starting to take into consideration the impacts of radiation upon all components of the biosystem. Protection of the environment for the sake of its inhabitants, not just humans.

Now, that's a big order given the limitations under which EPA must operate with respect to the law. However, it would be appropriate for there to be a more careful consideration of the impacts associated not only with the radiation from this locality, but also the potential for many additive sources as we see currently, the move toward deregulation of radioactive materials and wastes which will inevitably add to the dose commitments for humans and for the environment, various aspects which in turn may impact upon human health.

So we encourage EPA in a revision of this

standard, which by the way we welcome after a long, long wait. But we encourage EPA to rethink, certainly to retain the ground water standard. That is extremely important. We commend you on following the law, but also to move toward what is to the precautionary principle, a maximizing of conservatism.

On behalf of these three organizations, I will be submitting additional comments in writing, and others within the organization will be doing so as well. And I do encourage you to extend the comment period.

And thank you very much.

MR. PAGE: Thank you. Do we have any other speakers that came here today? The method that we have is for people to register in the back before you speak, but we can take care of that if folks are here to make a statement, and we can get you registered.

That's the end of our folks that pre-registered, so what we'll do is, if there is nobody here today -- I'm waiting for any hands, or if anybody missed the first call -- I don't see anybody here that's wanting to speak right now.

What I think we'll do is take just a short ten-minute break and we'll be back, and by then maybe some people have registered.

We'll adjourn for ten minutes, for a

break. Thank you.

(Brief recess.)

MR. PAGE: I'd like to reconvene here. It was a little bit longer than ten minutes, but I was of the understanding and I think it's still current that there are no new speakers signed up at this time.

So what I would like to offer, is folks that spoke earlier that would like to elaborate on their oral statements, those representing organizations would be for ten minutes, individuals for five minutes, and give folks an opportunity to do that. And then second, if there are no more speakers signed up at this time, or there are no further statements, what we'll do is probably just be in temporary adjournment until folks do show up.

We will be here waiting for people's comments, but rather than doing a series of ten-minute incremental breaks we'll be here on hand, and as people show up that want to testify, we will reconvene.

Let me check one more time; is there anybody new here that has not spoken that wishes to speak?

(No response.)

Is there anybody this morning that wishes to elaborate on their oral testimony? Mr. Kamps. Let me

just make sure, is Mr. Kraft still here? If we do some semblance of order, I'll give him an opportunity. I don't see him.

All right, Mr. Kamps, you have another ten minutes if you'd like, and Ms. Johnsrud, you would like to speak as well?

DR. JOHNSRUD: Yes.

MR. PAGE: Okay, very good. This is Mr. Kamps from the Nuclear Information Service.

MR. KAMPS: I'll do it right this time. I forgot to give my name earlier. My name is Kevin Kamps, and it's K-a-m-p-s as in Sam on the end. And my organization is the Nuclear Information and Resource Services, based in Washington, D.C., and we have members, we're a member-supported organization. We have members in 50 states, and we're 21 years old as an organization. And we've been involved in this issue of high-level nuclear waste since the beginning of our organization, and that is my position at NIRS, the high-level waste issue.

And I just wanted to come back up, because some of the things that were said today kind of lit lightbulbs in my head, and I wanted to make some commentary on those things. There is no particular order, I just took notes.

So one of the first things I wanted to comment on was a statement made, Mr. O'Connell, was that your name? About utility consumers across the country. And I'm recently arrived to Washington to work for NIRS. I only started in June, and before that I was born and raised in Kalamazoo, Michigan, and our utility company out there is Consumer's Power, now called Consumer's Energy, which operates the Palisades Nuclear Plant and also the Big Rock Nuclear Plant which is now closed down, but Palisades is still operating. And that's located just 40 miles from Kalamazoo, on the shoreline of Lake Michigan.

And that's how I got involved in all this stuff. For the past ten or 15 years, since I was in high school actually, I became concerned about the nuclear waste issues associated with Palisades. And so I just wanted to point out, and that's been said by our Congressman from Michigan, Congressman Upton who is the sponsor of the bill in Congress that would target Yucca Mountain as the waste site for the nation as well, he often says in public that we're getting the waste out of Michigan and off the shoreline of Lake Michigan, and this is a good thing. And the people in Michigan love this, and every chance that I get to say, the people in Michigan who have fought the waste and who have been most

concerned about the waste are the ones who also are concerned for the people of Nevada.

And before I came to Washington I was in an organization called Don't Waste Michigan, which was very involved in trying to get an injunction against the loading of the spent fuel casks at Palisades, the argument being that there was no safe way to unload these casks, that was clear.

And we lost in the federal courts, and Consumer's Energy and the NRC told the judge that if there was a problem with the waste casks that they would simply reverse the process and unload them.

Well, when the fourth cask was loaded and found to be defective, it was clear that they didn't have a safe way to unload the casks, and so I just wanted to point out that utility consumers across the nation and Michigan, and I know a lot of them in that area, are very concerned about safety first, and economic considerations should not be placed above safety.

Another comment I have is about the uncertainties of 10,000 years, and I just wanted to re-emphasize something that was said by Dr. Johnsrud that, given the uncertainties, that the most conservative standard should be applied, not lesser standards because of the uncertainty.

Another comment I wanted to make that I forgot to earlier was something that occurred to me as I was reading the proposed standard. In a number of places, and I wish that I could read it word for word, it said that a lot of the decisions to be made are policy, perhaps even more so than science in regards to Yucca Mountain. And one of the statements that was made also was that it's what society will accept that will determine whether we go forward with this or not.

And it brought to my mind something that I wanted to share with everyone. And that was a quote from Frederick Douglas, who was the abolitionist during slavery in this country, a freed slave himself. And again, I don't have the verbatim quote, but his point was that given the struggle, the power struggle between the haves and the have-nots or the oppressors and the oppressed in this country, and his context of course was slavery, but it applies to other issues as well.

His point was that the oppressors or -- yeah, the oppressors, will try to get away with as much as they can so long as the oppressed don't fight back. And so when I read that comment in the EPA proposed standards, that it will be a societal decision whether we go forward or not, whether this level of dose to the public is acceptable, it just brought that up to my mind,

and I just would like to share that. We would like to get a lot more people involved in this issue, and the kind of - it harkens back to also the low attendance today from the public and from public interest organizations.

To my knowledge the Federal Register notice for this public hearing only came out on October 1st, and I know that a number of organizations who would otherwise be here are very busy right now working on the CTBT, which is in crisis mode. And so for that reason a lot of our allies in this struggle are not here today. But I'm sure that they will submit written comments as will we before the deadline.

But I would like to add to what Dr. Johnsrud said, that an extension of the comment period would be helpful for all of our organizations to do the best job that we can.

Just to re-emphasize, the 20-kilometer compliance point for us really represents a nuclear sacrifice zone. And we feel that the point of compliance should be at the boundary of the waste site. Otherwise calling it boundary really is meaningless, because the boundary would then be at 20 kilometers, not at the so-called footprint. The footprint would be 20 kilometers in radius at that point.

Another point is in regards to the relationship between Yucca Mountain and WIPP, just a question again about the point of compliance. How can or why would Nevadans be less deserving than the New Mexicans for protection, and so why would there be a difference between the point of compliance between Yucca Mountain and WIPP?

Another point that I think is very significant is that again, only blatant fatal cancers are being considered under this proposed rule as a significant health impact, and I would like to echo what was said earlier, that there are a number of other injuries related to radiation that should be considered that are very important issues of public health.

I wanted to point out also that Yucca Mountain does not exist in a vacuum out there. The Nevada Test Site is right there. The low-level nuclear dump is right there. And also the opening of the floodgates that's being pushed in terms of release of radioactive materials into society. All of these multiple exposures should be considered in a connected way, and not in isolation from each other. The impact of multiple exposures.

And a last point is the biosphere considerations, the changing of climate over time is very

significant. The possibility that glaciation will occur on this continent again, and that that area could become a temperate region with much heavier rainfall and bodies of surface water, in which case the exposure scenarios would change drastically, and the public could be much more exposed to doses of radiation.

Oh, one more point. In regards to other living organisms in the environment, again the constraint is placed on EPA about what they can consider, but these are very significant issues as well, and could be addressed even if not legally binding upon the repository project, but certainly could be brought up as issues to be considered at the Yucca Mountain site.

Thank you.

MR. PAGE: Thank you. Dr. Johnsrud?

DR. JOHNSRUD: Hi again, my name is Judith Johnsrud. And I too have several points that I'd like to mention and that are brought to mind by other speakers.

First, 17 years seems a long, long time, but we're dealing with issues in which the peak dose is anticipated to be well beyond 100,000 years. It is almost beyond human imagination to have assumed that we could solve the problem of geologic disposal within fewer than 20 years. And therefore my expectation is that we may see a good many more iterations of this effort.

Don't feel too glum. We're getting somewhere, perhaps, but I think that we may have indeed a long way to go. And in that regard I want to make it clear that none of the organizations that I'm associated with is in any way supportive of the approval of Yucca Mountain. We do believe that there is now adequate information available, when we combine the physical factors as Mr. Kamps has just mentioned of climate change, of the geologic instability of the area.

When one stands atop Yucca Mountain as our Sierra Club Nuclear Waste Task Force did a couple of years ago, and counts the cinder cones that are visible within a few miles, it's pretty clear that this is indeed a geologically uncertain location for radioactive waste.

In addition to all of the problems, geologic problems that have been uncovered within the past few years, just consider: Had DOE moved ahead very rapidly initially, without the confirmatory or non-confirmatory research that has been done, we might have found that we were indeed deep into a much more costly mistake, both in terms of eventual damage to human beings and the cost for redoing the job. Better to iterate now and reiterate than find that we have proceeded falsely.

So I'd add that to the precautionary principle in general.

Third, and again, these are not in a particularly proper order, isolation of radioactive waste or any other hazardous material means exactly that. Isolating the material from the biosystem. And that means zero release, which in turn means a zero dose from that source.

We've already taken a tremendous compromise with the very notion of isolation of the waste, and failing to define disposal as isolation for the full hazardous life of the waste.

In addition, while we're looking at the reasonably maximally exposed individual, there is a concern about overall population dose that does not seem to have been given due consideration. The produce of the Amargosa Valley already ends up in the Los Angeles markets, and again, given the potential for climate change, for alterations of land use, that could become a more significant factor, particularly when we add in the anticipated additional doses from deregulated materials that may be recycled into consumer products over time, and many other sources of ionizing radiation, and alternatively, other contaminants.

I intended to mention earlier that at the international symposium on ionizing radiation last spring, which by the way the Nuclear Regulatory

Commission totally failed to attend, but Ms. Ferguson was there for EPA, there was substantial discussion not only of the additive impacts of multiple sources of exposure, but of the necessity for much greater attention to the synergies, the synergisms between and among radiation interacting upon and with the variety of other contaminants within the biosystem, to which the individual is exposed.

After all, it is the ultimate set of exposures to damaging materials upon an individual and the offspring of that individual that are of our concern in human health protection.

We have the issues of decommissioning and the ongoing disagreement between NRC and EPA over the decommissioning standard, and I want to note here that there are states that now are looking well beyond even EPA's 15 millirem, four millirem, ground water. The State of Massachusetts to my understanding has adopted a ten millirem exposure with respect to a decommissioned site that would currently be used in the future for, in the near future, for release and occupance.

So far from being overly conservative, the argument may well be made that EPA's 15 millirem plus the ground water standard is quite far from being conservative enough to satisfy the concerns of states.

With regard to the Yucca Mountain area, I don't think -- particularly for people in the east -- that arid lands are wastelands that can well be sacrificed to this damaging or potentially damaging, if you prefer, utilization. And I would like to remind us again that arid lands are, along with the cold lands of the world, really the most fragile of all ecosystems.

Easily damaged, difficult if not impossible to repair, and perhaps that word "footprint" is quite appropriate. The footprint of a human being in a desert land may last a very, very long time.

Finally, two last points. I come from reactor communities and reactor concerns. I'm deeply troubled at the likelihood that reactor sites that were never designed for waste isolation, even for waste storage, will by default become sites that as the economics of the electric utility industry change so enormously are subject to potential abandonment by just about everybody.

My long-time concerns with Three-Mile Island remind me, I have a photograph of the entire island under water during Hurricane Agnes before TMI-1 went into operation. Reactors were never sited with any intent for waste to remain on the sites.

And so that points up the depth of the

dilemma. That does not justify proceeding with the Yucca Mountain site given the many uncertainties. And thus the stronger that EPA's regulation with respect to standards, the better-served will be everyone as we undertake a re-evaluation, and I think it's needed of what we're going to do with high-level radioactive waste.

Above all, I am deeply concerned that we are seeing a concerted move away from the linear hypothesis of dose response, when in fact a substantial body of literature now exists to indicate that we should be moving to substantially more conservative, not less conservative protection of people and the environment.

And thank you again for your patience.

MR. PAGE: Thank you.

Any other speakers? All right, hearing none, what we'll do is we'll temporarily adjourn and wait for other speakers to show at this time. Thank you.

(Whereupon, following a waiting period until 5:00 o'clock p.m., with no other speakers appearing to testify, the hearing was concluded.)